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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,649	05/24/2000	William C. Treurniet	1245.007	4450

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EXAMINER
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TRAN, CON P

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 01/04/2005

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/577,649

Applicant(s)

TREURNIET ET AL.

Examiner

Con P. Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: On page 11, line 7, the word "signal36" should be "signal 36".

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. **Claims 1-3, 5, 7, 9-11, 13-14** are rejected under 35 U.S.C. 102(a) as being anticipated by Colomes et al. ("A Perceptual Model Applied to Audio Bit-Rate Reduction", J. Audio Eng. Soc. Vol. 43, pp233-240, April 1995, cited by Applicants (hereinafter, "Colomes").

Regarding **claim 9**, Colomes teaches a system for determining an objective audio quality measurement of a target audio signal, comprising:

a peripheral ear processor (artificial ear) for processing a reference audio signal (i.e., minimum masking curve level) and a target audio signal (i.e., maximum

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audio signal level) to provide a reference basilar sensation signal and a target basilar sensation signal, respectively (page 238, left column, pars. 3-5; page 234, right column, par. 2);

a comparator for comparing the reference basilar sensation signal and the target basilar sensation signal to determine a basilar degradation signal (calculate the difference; page 238, left column, pars. 5,6); and

a cognitive processor for processing the basilar degradation signal to determine at least one cognitive model component for providing an objective perceptual quality rating (using spreading function, page 235, left column, last paragraph - page 235, right column, second paragraph; page 234, left column, pars 4,5).

Regarding **claim 10**, Colomes teaches a system according to claim 9, wherein the at least one cognitive model component is selected from coefficient of variation of distortion (i.e. upper slope; page 235, left column, last paragraph - page 235, right column, second paragraph).

Regarding **claim 11**, Colomes teaches a system according to claim 9, wherein the peripheral ear processor further provides a harmonic structure from an error spectrum obtained through a comparison of the reference and target audio signals (applying power density spectrum; page 236, left column, last paragraph – page 237, left column, par. 2).

Regarding **claim 13**, Colomes teaches a system according to claim 9, wherein the cognitive processor includes pre-processing means for determining effects of at least one of perceptual inertia, perceptual asymmetry (page 237, left column, second paragraph) and adaptive threshold (i.e., below a threshold  $\sigma$ , there will be no detection (page 236, left column, first paragraph)).

Regarding **claim 14**, Colomes teaches a system according to claim 9, wherein the peripheral ear processor includes a recursive filter (low pass filter in [8], i.e., autoregressive filter in Paillard et al., page 24, right column, prior art in record; see Colomes page 234, right column, paragraph 2).

Regarding claims **1, 2, 3, 7, and 5**, these claims merely reflect the process to the apparatus claim of claims 9, 10, 11, 13, and 14, respectively and are therefore rejected for the same reasons.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 4, 6, 12 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Colomes et al. ("A Perceptual Model Applied to Audio Bit-Rate

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Reduction", J. Audio Eng. Soc. Vol. 43, pp233-240, April 1995, cited by Applicants (hereinafter, "Colomes") in view of Hollier U.S. Patent 5,621,854.

Regarding **claim 12**, Colomes teaches a system according to claim 9. However, Colomes does not explicitly disclose wherein the cognitive processor includes a multi-layer neural network.

Hollier teaches method and apparatus for objective speech quality measurement (Title) in which an analysis unit (8, Fig. 2) having outputs being combined by processing of a neural network (col. 11, line 59 – col. 12, line 12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated a neural network of Hollier with Colomes artificial ear model for purpose of providing a signal indicating the perceptual significance of the distortion in the signal, as suggested by Hollier in column 12, lines 8-9).

Regarding **claim 15**, Hollier further teaches a system according to claim 9, wherein the cognitive processor includes weighting means for adjacent frequency ranges (col. 9, lines 5-31; Fig. 9).

Regarding claims **4 and 6**, these claims merely reflect the process to the apparatus claim of claims 12 and 15 and are therefore rejected for the same reasons.

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6. **Claims 8 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Colomes et al. ("A Perceptual Model Applied to Audio Bit-Rate Reduction", J. Audio Eng. Soc. Vol. 43, pp233-240, April 1995, cited by Applicants (hereinafter, "Colomes") in view of International Telecommunication Union- Radiocommunication Sector BS 1387 (hereinafter, "ITU-R BS 1387").

Regarding **claim 16**, Colomes teaches a system according to claim 9. However, Colomes does not explicitly disclose wherein the cognitive processor includes adjustment means for adjusting the basilar degradation signal according to a variance of auditory filter envelope modulation rates of the reference audio signal.

ITU-R BS 1387 teaches an objective measurement of perceived audio quality in which a cognitive processor includes adjustment means for adjusting the basilar degradation signal according to a variance of auditory filter envelope modulation rates of the reference audio signal (Table 4, page 16; page 19, paragraph 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated an objective measurement of perceived audio quality of ITU-R BS 1387 with a perceptual model of Colomes for purpose of providing an accurate model of a peripheral auditory system as well as cognitive aspects of audio quality judgment, as suggested by ITU-R BS 1387 in page 17, last paragraph. It should be noted that a "List of corrections of the ITU-R Recommendation BS.1387" is provided in lieu of ITU-R BS 1387 to show the changes have been made in ITU-R BS 1387 before ITU-R BS 1387 becoming ITU-R BS 1387-1.

**Regarding claim 8**, this claim merely reflects the process to the apparatus claim of claim 16 and is therefore rejected for the same reason.

### ***Response to Arguments***

7. With respect to rejections of **claims 1-7, and 9-15**, subject matters in claims 1-7, and 9-15 are supported by parent application PCT/CA99/00258. Therefore priority of parent application PCT/CA99/00258 is sufficient to overcome the ITU-R BS 1387 reference. Accordingly, rejections of claims 1-7, and 9-15 are withdrawn.

With respect to rejections of **claims 8 and 16**, subject matters in claims 8 and 16 are not supported by parent application PCT/CA99/00258. Therefore claims 8 and 16 cannot obtain the benefit of the filing date of parent application PCT/CA99/00258. Thus, priority of parent application PCT/CA99/00258 is not sufficient to overcome the ITU-R BS 1387 reference.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Con P. Tran, whose telephone number is (703) 305-2341. The examiner can normally be reached on M - F (8:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703)



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872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Customer Service Office at telephone number (703) 306-0377.

cpt *CPJ*  
December 23, 2004

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XU MEI  
PRIMARY EXAMINER